The art and science of amateur experimentalism

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» Energetic Materials

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Author: **Subject: Lead dioxide anodes**

S.chegini
Harmless
*

posted on 4-9-2019 at 05:03

Lead dioxide anodes

Posts: 1
Registered: 4-9-2019
Member Is Offline

Dear friends

One of my friends introduced you to me as an expert in the field of lead dioxide anode manufacturing. I have made an anode in an experimental setup and i want to utilized it in a perchlorate cell. However, there are some questions in this field for me.

1. I have heard that the anodes should be activated before electrolysis in perchlorate cell. How can i do it?

2. The initial quantity of sodium floride in my electrodeposition bath is about 2 g/lit. How much sodium floride should be added to the electrodeposition bath after manufacturing of an anode with the length of 30 cm and diameter of 4 cm and coating thickness of 3 mm

3. The surface of deposit which is obtained at temperature of 85 degree centigrade is rough. How can i decrease it?

The Best Regards

S. Chegini.

PROFILE FIND

underground
International Hazard
*****

posted on 4-9-2019 at 06:07

Posts: 543
Registered: 10-10-2013
Location: Europe
Member Is Offline

Why don't you just buy them from alibaba. This is what most people do

PROFILE FIND

Pyro_cat
Hazard to Others
***

posted on 6-9-2019 at 22:52

Posts: 118
Registered: 30-4-2018
Member Is Offline

Mood: No Mood

> **Quote: Originally posted by underground**
>
> Why don't you just buy them from alibaba. This is what most people do

Certain satisfaction from making stuff from things you can find in your environment.

Sure you can buy potassium nitrate but you can also make it from urine.

PROFILE FIND

underground
International Hazard
posted on 6-9-2019 at 23:01

Posts: 543
Registered: 10-10-2013
Location: Europe
Member Is Offline

Making LD anodes is a very hazardous process. Lead nitrate is very toxic.

PROFILE FIND

yobbo II
National Hazard
posted on 8-9-2019 at 06:28

Posts: 332
Registered: 28-3-2016
Member Is Offline

Mood: No Mood

https://geocitieschloratesite.000webhostapp.com/

PROFILE FIND

Laboratory of Liptakov
International Hazard
posted on 23-9-2019 at 12:31

Posts: 818
Registered: 2-9-2014
Member Is Offline

Mood: cool.gif

Every beginner has tendention make all from nothing. Is it an basic feature of the researchers. But sometimes it is in basically impossible. Created the quality lead dioxide, in homemade conditions, on the reliable carrier substrate is one from them. LL

Safety explosive Alfred Nobel 1867. Safety ecologic detonator Dr. Liptakov 2015.

PROFILE FIND

caterpillar
National Hazard
posted on 23-9-2019 at 16:18

Posts: 416
Registered: 8-1-2012
Member Is Offline

Mood: No Mood

> **Quote: Originally posted by Laboratory of Liptakov**
>
> Every beginner has tendention make all from nothing. Is it an basic feature of the researchers. But sometimes it is in basically impossible. Created the quality lead dioxide, in homemade conditions, on the reliable carrier substrate is one from them. LL

Really? But what if I take then from an accumulator? When it is charged, one electrode contents lead, the other lead dioxide.

Women are more perilous sometimes, than any hi explosive.

PROFILE WWW FIND

Laboratory of Liptakov
posted on 23-9-2019 at 23:01

International Hazard
★★★★★

Posts: 818
Registered: 2-9-2014
Member Is Offline

Mood: cool.gif

This is a great idea and logical judgment, but it does not work. The battery electrode disintegrates within minutes. If it were so easy, everyone would have done it long ago. But you can try it.... ...LL

Safety explosive Alfred Nobel 1867. Safety ecologic detonator Dr. Liptakov 2015.

PROFILE FIND

caterpillar
National Hazard
★★★★

posted on 24-9-2019 at 00:40

Posts: 416
Registered: 8-1-2012
Member Is Offline

Mood: No Mood

> **Quote:** **Originally posted by Laboratory of Liptakov**
>
> This is a great idea and logical judgment, but it does not work. The battery electrode disintegrates within minutes. If it were so easy, everyone would have done it long ago. But you can try it.... ...LL

But why? It lives in an accumulator and withstands many cycles. Why should it disintegrate in the solution of NaClO3?

Women are more perilous sometimes, than any hi explosive.

PROFILE WWW FIND

rockyit98
Hazard to Others
★★★

posted on 24-9-2019 at 03:34

Posts: 141
Registered: 12-4-2019
Location: The Known Universe
Member Is Offline

Mood: i love chemistry so far.

i keep sodium sulfide with in a hand of reach when i'm dealing with toxic soluble compounds .like Pb Cu Ni Mn Cr Hg salts. you cannot be too careful.
Making Graphite Substrate Lead Dioxide Anodes https://www.youtube.com/watch?v=tXSpqy2TNWo

PROFILE FIND

markx
International Hazard
★★★★★

posted on 24-9-2019 at 04:16

Posts: 591
Registered: 7-8-2003
Location: Northern kingdom
Member Is Offline

Mood: Very Jolly

> **Quote:** **Originally posted by caterpillar**
>
> > **Quote:** **Originally posted by Laboratory of Liptakov**
> >
> > This is a great idea and logical judgment, but it does not work. The battery electrode disintegrates within minutes. If it were so easy, everyone would have done it long ago. But you can try it.... ...LL

> But why? It lives in an accumulator and withstands many cycles. Why should it disintegrate in the solution of NaClO3?

In perchlorate cell the anodes are strongly polarized. About 2V vs. SCE for optimal synthesis of perchlorate with PbO2 material. As far as I know lead acid batteries do not reach such polarisation levels. This is perhaps one of the contributing factors to anode deterioration under perchlorate formation conditions.
A lead dioxide anode that holds up to operation very nicely in sulfuric acid solutions tends to disintegrate quite fast in a perchlorate cell.

For reference regarding perhlorate synthesis on PbO2:
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.824...

Exact science is a figment of imagination.....

PROFILE FIND

phlogiston
International Hazard
★★★★★

posted on 24-9-2019 at 08:05

Posts: 1291
Registered: 26-4-2008
Location: Neon Thorium Erbium Lanthanum Neodymium Sulphur
Member Is Offline

Mood: pyrophoric

> **Quote: Originally posted by S.chegini**
>
> Dear friends
>
> One of my friends introduced you to me as an expert in the field of lead dioxide anode manufacturing. I have made an anode in an experimental setup and i want to utilized it in a perchlorate cell. However, there are some questions in this field for me.
>
> 1. I have heard that the anodes should be activated before electrolysis in perchlorate cell. How can i do it?

I don't think I have ever read about an activation step (where did you come across it?), and it is certainly not essential. I and others have used lead dioxide anodes directly after plating and that seems to work fine.

> **Quote:**
>
> 2. The initial quantity of sodium floride in my electrodeposition bath is about 2 g/lit. How much sodium floride should be added to the electrodeposition bath after manufacturing of an anode with the length of 30 cm and diameter of 4 cm and coating thickness of 3 mm

The electrodeposition bath does not usually contain fluoride as far as I am aware, but it is added to the perchlorate cell electrolyte to improve current efficiency. This is optional. Perchlorate cells can work without it, at the cost of reduced efficiency. 2 g/L sodium fluoride is a typical concentration for that application. I don't think fluoride is consumed in the reaction, but I can image small amounts may be lost with the harvesting of raw, crystallised product, and perhaps as volatile HF, depending on cell pH. I don't recall reading anywhere about a need for periodic re-addition of fluoride.

What is the composition of your electrodeposition bath, and what is the substrate that you are plating?

Also take note of sodium fluoride's highly poisonous nature, in your consideration whether to add it to your cells or not.

> **Quote:**
>
> 3. The surface of deposit which is obtained at temperature of 85 degree centigrade is rough. How can i decrease it?

Keep in mind that roughness is not necessarily a problem in itself, as long as there are no pits/defects in the coating. That being said, several methods are known. I have obtained extremely shiny deposits by plating onto a rotating anode.
Other methods are adding certain surfactants to the plating bath (I specifically recall cetyl trimethyl ammonium bromide being used), sonication, and suspending abrasive particles in the bath with strong stirring. All of these have the effect of removing bubbles from the anode as it is being plated.

Another reason for a rough coating may be excessively high current density. What current density are you using while plating?

If you haven't seen it already, there is very long, but great thread on lead dioxide electrodes: here. Well worth the read.

"If a rocket goes up, who cares where it comes down, that's not my concern said Wernher von Braun" - Tom Lehrer

PROFILE FIND

RogueRose
International Hazard
★★★★★

posted on 26-9-2019 at 07:06

Posts: 1353
Registered: 16-6-2014
Member Is Offline

It depends on what you need. Are you talking about commonly available chemicals or harder to find chems? Ebay is good of course, sometimes prices can be high or questionably low.

There is a company called "the science company" that has a good selection of chems for a good prices.

There are a few pyrotechnics companies that have a very nice selection of chems as well, do a search as I don't want to name them here b/c of stupid people (not referring to users here..). PM me is you want.

Pottery companies are also a good source for chems that are used in their profession, which is actually a pretty wide range.

Biodiesel producers have a nice selection asl well from acids, to bases.

Pool chem companies.

If you are looking for something specific message me and I'll see if I can point you in the right direction but if it is for more advanced chemistry, I'm not going to be much help there as those suppliers often need businesses for shipping or sales.

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